



CEREAL RUST BULLETIN

Issued by:

Cereal Disease Laboratory

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For the latest cereal rust news from the field, subscribe to the cereal-rust-survey listserv. To subscribe, please visit:

<http://www.ars.usda.gov/Main/docs.htm?docid=9970>

Or, send an email to: oluseyi.fajolu@usda.gov

Reports from this list as well as all Cereal Rust Bulletins are maintained on the CDL website (<http://www.ars.usda.gov/mwa/cdl>)

- Wheat stem rust was found in Washington and Virginia.
- Low levels of wheat leaf rust were reported from Washington, North Dakota, South Dakota, Nebraska and Minnesota.
- Wheat stripe rust was observed in four additional states – South Dakota, Minnesota, Wisconsin, and New York.
- New observations of oat crown rust were from South Dakota and New York.
- Barley leaf rust is present in Washington and New York at low incidence and severity.
- Barley stripe rust is severe in the Pacific Northwest.
- 2019 wheat leaf rust race survey results are available.
- Request for cereal rust observations and samples in 2020.

For original, detailed reports from our cooperators and CDL staff, please visit the [Cereal Rust Situation \(CRS\)](#) reports page on the [CDL website](#).

Weather conditions. According to the “USDA Weekly Weather and Crop Bulletin” and the “U.S. Agricultural Weather Highlights” released on June 30, scattered to widespread showers occurred from the Plains to the East Coast. The rain benefitted spring wheat and barley but resulted in local flooding in eastern North Dakota. Several areas of the New England, the Atlantic region, and the upper Midwest received little or no rainfall and remained dry and hot. In the West, the hot and dry weather favored fieldwork and winter wheat maturation.

Crop conditions. According to the June 30 report, 41% of the nation’s winter wheat acreage was harvested, 15 percentage points ahead of last year but equal to the 5-year average. Fifty-two percent of the winter wheat crop was reported in good to excellent condition compared to 63% at the same time last year. On June 28, 36% of the spring wheat had headed nationwide, 16 percentage points above the previous year but nine points below average. Sixty-nine percent of the nation’s spring wheat was rated in good to excellent condition, six percentage points below the same time last year. As of June 28, 74% of the 2020 oat acreage was headed, 20 percentage points higher than last year but one point below average. Sixty-one percent of the oat crop was rated in good to excellent condition, four percentage points below the same time last year. Thirty-nine percent of the nation’s barley acreage had reached the headed stage, 14 percentage points above last year but six points



below average. Seventy-five percent of the barley crop was rated in good to excellent condition, three percentage points above the previous year.

Wheat stem rust. An isolated stem rust infection site was found on soft wheat breeding line in a nursery in Warsaw, VA on June 16. Stem rust was reported on a winter wheat variety 'Norwest Tandem' in a nursery near Pullman in Whitman County, WA on June 29. Previously, wheat stem rust was reported from Texas, Oklahoma, and Louisiana. Race QFCSC was identified from samples collected from TX, OK, LA, and VA.

Wheat leaf rust. Recently, low levels of wheat leaf rust were observed in Washington, North Dakota, South Dakota, Nebraska, and Minnesota. Previous publications indicated severe leaf rust in Texas, moderate to high in Oklahoma and Virginia, and low levels in Kansas, Kentucky, and Louisiana (see [Cereal Rust Bulletin #2 and #3](#)).

Washington – Leaf rust was found on a single winter wheat leaf in an experimental field near Pullman in late June.

North Dakota – Only a few pustules of wheat leaf rust were present on susceptible varieties in the winter wheat and spring wheat trials surveyed on June 24. Disease incidence was very low.

South Dakota – Wheat leaf rust was found on winter wheat in Brookings at low severity in the third week of June.

Nebraska – Wheat leaf rust was reported from the University of Nebraska Lincoln's farm in Lancaster County on June 8. Growers' fields scouted in the south central and southeast areas were without leaf rust. Wheat growth stages ranged from full heading in the northwest to dough development in the southeast at that time.

Minnesota – Leaf rust was reported to be at low incidence and severity in plots of winter and spring wheat in southern Minnesota in the last week of June.

Wheat leaf rust collection map. Please visit: <http://www.ars.usda.gov/Main/docs.htm?docid=9757>

Wheat cultivar *Lr* gene postulation database.

Please visit: [Leaf rust resistance gene postulation in current U.S. wheat cultivars](#)

2019 wheat leaf rust survey summary and results are available.

Please visit: [Wheat leaf rust race survey results](#)

Wheat stripe rust. New observations of wheat stripe rust were from South Dakota, Minnesota, Wisconsin, and New York. Previously, stripe rust was reported from Texas, Louisiana, Oklahoma, Kansas, Nebraska, California, Oregon, Washington, Idaho, Michigan, Illinois, Kentucky, and Virginia (see [Cereal Rust Bulletin #3](#)).

Washington – Wheat stripe rust was severe on susceptible varieties, rated 90 – 100S, in all the experimental winter wheat nurseries across the state. Commercial winter wheat fields were mostly free of stripe rust as the growers controlled the disease with fungicide applications. In the spring wheat experimental fields, stripe rust had reached 80 – 100% severity on susceptible varieties in Walla Walla and Lind Counties, and up to 60% around Pullman. Winter wheat is approaching or had reached maturity, and spring wheat ranges from boot to milk growth stages.

South Dakota – In early June, low levels of stripe rust were observed in winter wheat variety trials at Hughes and Tripp Counties. Wheat growth stages ranged from heading to flowering. By June 18, heavy stripe rust was found on winter wheat variety 'Expedition' in a trial plot at Winner, Tripp County. At that time, the majority of winter wheat

was past flowering, and an increase in foliar disease is not likely to significantly impact yield. Moderate stripe rust was reported on susceptible varieties in Brookings County.

Nebraska – Wheat stripe rust did not progress after it was first detected at trace incidence and severity in Thayer County in late May. Hot and dry weather must have prevented disease development. Stripe rust has not been reported from elsewhere in the state.

Minnesota – On June 11, infection foci of stripe rust were observed in a winter wheat nursery planted in St. Paul, Ramsey County. Wheat in the nursery ranged from fully headed to anthesis. Disease severity at the infection foci ranged from trace to 20%. Infected leaves were on the upper canopy, indicating recent infection from an extraneous source of inoculum.

Wisconsin – In late May to early June, wheat stripe rust was found on susceptible cultivars in the uniform variety trials in Calumet and Columbia Counties. Disease incidence and severity were low, and no increase was noticed in fields surveyed across the state, according to the Extension Plant Pathologist report on June 23. The weather was too hot and dry for stripe rust to thrive.

New York – In the first week of June, wheat stripe rust was observed on soft red winter wheat ‘Erie’ and ‘Seedwa 550’ varieties in Seneca and Wayne Counties, respectively. Later in June, stripe rust was confirmed in Cayuga and Tompkins Counties. Disease severity and incidence were low in all the counties. In general, cereal rust development and progression are limited across the state, and thereby not a big concern in the 2020 winter cereal production. The unusually warm and dry conditions most likely suppressed rust diseases.

Wheat stripe rust collection map. Please visit: <http://www.ars.usda.gov/Main/docs.htm?docid=9757>

Please send wheat and barley stripe rust collections as soon as possible after collection to: Dr. Xianming Chen, USDA-ARS (Washington State University; see details in attached rust collection guide).

Oat crown rust. Oat crown rust was confirmed in South Dakota and New York. Previously, widespread and severe crown rust was reported in Louisiana (see [Cereal Rust Bulletin #1](#)).

South Dakota – Oat crown rust began to develop on oat fields in mid-June and had increased significantly by the end of June.

New York – Severe oat crown rust was reported from a field in Livingston County in June.

Oat crown rust collection map. Please visit: <http://www.ars.usda.gov/Main/docs.htm?docid=9757>

Oat stem rust. Three oat stem rust samples collected from Rodney and Marvelous varieties were received at the Cereal Disease laboratory from Hidalgo County in Texas. Previously, widespread and severe crown rust was reported in Louisiana (see [Cereal Rust Bulletin #1](#)).

Barley leaf rust. Barley leaf rust was found in Washington and New York in June. The disease was previously reported in Texas and Virginia (see [Cereal Rust Bulletin #3](#)).

Washington – On June 30, minute leaf rust pustules were observed on few leaves of a winter barley variety in a breeding nursery at Central Ferry in Garfield County.

New York – In early June, low levels of barley leaf rust were found on multiple varieties in experimental plots at Cayuga and Tompkins Counties. No rusts have been observed in spring barley fields.

Barley stripe rust. Stripe rust had developed up to 80% severity on susceptible varieties in winter barley nurseries in the Pacific Northwest. On the contrary, low disease severity was observed on susceptible varieties in the spring barley nurseries in late June. Barley stripe rust was previously reported in California.

Barley stem rust. This disease has not been reported in the U.S. this year.

Alternate host. Crown rust aecia was present on buckthorn in central and western New York in May and June. Heavy infection of crown rust was seen on buckthorns on June 10 in South Dakota.

Request for cereal rust observations and samples

Cereal Disease Laboratory, USDA-ARS, St. Paul, MN

(Please save this for future reference)

Cooperators' assistance is critical to our work

We depend on the assistance of our cooperators for cereal rust observations and samples (as well as other significant small grain disease observations). We understand the challenges associated with movement restrictions at this time. However, if you are able to go to cereal fields, please collect rust samples and send to us. We sincerely thank all those who have assisted us in the past and hope the assistance continues this year, especially during this hard period.

Observations

If you have information on the cereal rust situation in your area that you would be willing to share with the group, please email your observations to:

CEREAL-RUST-SURVEY@LISTS.UMN.EDU

Or, to: Dr. Oluseyi Fajolu (oluseyi.fajolu@usda.gov)

We would like to include your name and email address so others can contact you. If, however, you prefer not having your name or email address appear with the information, please let us know when submitting your observations.

Information of most importance

We welcome any information you can provide but are particularly interested in:

- Location (state, county, city)
- Rust (leaf rust, stem rust, stripe rust, crown rust)
- Host (wheat, barley, oat, grasses, etc.)
- Cultivar or line name if known
- Grain class if known
- Severity and prevalence
- Growth stage: when the rust likely arrived, when infection was first noted and current growth stage
- Where rust is found on the plants, e.g., lower leaves, flag leaf, etc.

Guidelines for making cereal rust uredinial collections**

Reports on the distribution of races of cereal rust fungi are an important part of our annual cereal rust surveys. We routinely collect and test isolates of stem rust (wheat, oat, and barley), wheat leaf rust, oat crown rust and barley leaf rust. We are most interested in small grain collections (wheat, barley, oat and rye), but are also interested in stem rust, leaf rust, and stripe rust collections from grasses, e.g.:

Jointed goatgrass (*Aegilops cylindrica*)

Ryegrasses (*Elymus* spp.)

Wheatgrasses (*Elytrigia* spp.)

Wild barleys (*Hordeum* spp.)

Wild oat (*Avena fatua*)

Common grasses, e.g., *Agropyron*, *Agrostis*, *Festuca*, *Leymus*, *Lolium*, *Phleum*, and *Psathyrostachys* spp.

Images and descriptions of the above grass species can be found on the USDA Natural Resources Conservation Service's [PLANTS Database](#) website

1. Rust pustules should be fresh and fully developed, except when this may not be possible, i.e., the first uredinial collections found early in the season.
2. When rusted small grain or grass plants are encountered, please cut 5 to 10 sections of plant stem (if possible, avoid including plant nodes as they do not readily air dry) or leaf, 4 inches long with large and small pustules and place in a regular paper mail envelope (**Please Do Not use plastic or waterproof envelopes**). Do not staple or tape the envelope; instead fold the flap shut.
3. Important information should be recorded for each collection, e.g., date, county, state, cultivar or line, crop stage, whether collection is from a nursery or commercial field, etc. Please use our data collection form ([standard pdf](#) or [fillable pdf](#)) if possible. If the grass genus or species is unknown to the collector, please send a head in a separate bag or envelope, indicating which collection it is associated with to aid in identification.
4. Please avoid exposing samples to direct sunlight or unusual heat of any kind, e.g. car dashboard, outside mailboxes, etc. Samples should be kept at room temperature for 2 – 3 days to allow the plant material to dry. Afterwards the samples should be placed in a cooler or refrigerator before they are mailed. Please do not keep samples in a freezer. The samples should be sent to us as soon as possible after the samples have dried.
5. Please promptly mail the envelope(s) with the appropriate collection form inside each envelope to:

Dr. Oluseyi Fajolu/ Dr. Shahryar Kianian
Cereal Disease Laboratory, USDA-ARS
1551 Lindig Street
University of Minnesota St. Paul,
Minnesota 55108

**** Stripe rust collections should be sent by FedEx or UPS to:**

Dr. Xianming Chen USDA-ARS
361 Johnson Hall Washington State University Pullman, WA 99164-6430

By regular mail: Dr. Xianming Chen 361 Johnson Hall
P.O. Box 646430 Washington State University Pullman, WA 99164-6430

Note: Stripe rust collections are vulnerable to heat and do not survive long at warm temperatures; therefore, if shipment of collections for race identification is delayed, their viability will be greatly reduced. An overnight courier service is preferred for sending stripe rust collections.

If you have any questions regarding stripe rust samples, contact: Dr. Xianming Chen, Phone 509-335-8086; e-mail: xianming@wsu.edu or xianming.chen@ars.usda.gov

Thank you in advance for your assistance!

Current cereal rust situation

For the latest cereal rust situation reports, please subscribe to the cereal rust survey listserv list*.

Instructions can be found at:

<http://www.isoft.com/scripts/wl.exe?SL1=CEREAL-RUST-SURVEY&H=LISTS.UMN.EDU>

Or, if you prefer, simply send a subscription request to Dr. Oluseyi Fajolu (oluseyi.fajolu@usda.gov).

All messages sent to the list are archived on the CDL website: <http://www.ars.usda.gov/Main/docs.htm?docid=9757>

*The sole purpose of the Cereal Rust Survey listserv list is to provide a format for cereal researchers and extension personnel to share observations of cereal rusts and other cereal diseases. We make no warranty about any information shared on this listserv or its utility or applicability. Mention of any product, brand, or trademark does not imply endorsement or recommendation of that product, brand, or trademark by USDA-ARS, or any of the participants on this listserv. By enrolling on this listserv list, participants understand and agree to abide by these conditions.